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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/854,329	05/11/2001	Miriam H. Taimisto	259/157	7657

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BINGHAM, MCCUTCHEN LLP
THREE EMBARCADERO, SUITE 1800
SAN FRANCISCO, CA 94111-4067

EXAMINER

JAIN, RUBY

ART UNIT PAPER NUMBER

3737

DATE MAILED: 03/17/2004

4

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/854,329

Applicant(s)

TAIMISTO, MIRIAM H.

Examiner

Ruby Jain

Art Unit

3737

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) 33-44 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-21 is/are allowed.
- 6) ☒ Claim(s) 1,2,5-12,22,24,25 and 27-32 is/are rejected.
- 7) ☒ Claim(s) 3,4,23,26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. <u>4</u> |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2,3</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-32, drawn to a sensor assembly, classified in class 600, subclass 424.
- II. Claims 33-44, drawn to a method of making a sensor assembly, classified in class 29, subclass 25.35.

2. The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the process claimed can be used to make a different type of sensor assembly not necessarily for medical purposes.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group I, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Michael Bolan on March 2, 2004 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-32. Affirmation of this election must be made by applicant in replying to this Office action. Claims 33-44 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 7, 9-12, 22, 28, 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. U.S. Patent No. 5,819,749, further in view of Wallrafen U.S. Patent No. 6,070,337.

Regarding claims 1, 2, 7, 9-12, 22, 28, 30-32, Lee discloses micro-machined thin film cantilever actuators for steering through blood vessels, or position within a blood vessel. The actuators include tactile sensor arrays mounted on a catheter or guide wire tip for navigation and tissue identification (abstract). Lee further discloses wherein a thin film of titanium is evaporated onto a silicon substrate as an adhesive layer. An aluminum sacrificial layer is evaporated and patterned on a section of the adhesive

layer. A polyimide structural layer is then spun on the remaining section of the adhesive layer and the sacrificial layer, and then they are fully cured. A titanium/gold layer is evaporated on the polyimide layer as the electrode for polypyrrole deposition and doping. The polyimide is selected due to its low thermal expansion coefficient (column 5, lines 2-33).

Lee does not disclose wherein the sensor and encapsulant covering the sensor elements exhibit an approximately equal coefficient of thermal expansion. Lee further does not disclose wherein the sensor elements comprise of a metallic material.

Wallrafen discloses a passive magnetic position sensor, comprising a housing, and a substrate with a resistance network disposed on said substrate. The substrate and encapsulating housing cover consists of a material having the same or similar coefficients of thermal expansion (column 3, lines 13-15). Wallrafen further discloses wherein the sensor elements can comprise of a metallic material (claim 17).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to disclose wherein the sensor and encapsulant covering the sensor elements exhibit an approximately equal coefficient of thermal expansion and disclose wherein the sensor elements comprise of a metallic material, as per the teachings of Wallrafen into the teachings of Lee, because a similar coefficient of thermal expansion would provide a thermally stable sensor in environments where there is a great fluctuation of temperatures. Furthermore, it would be obvious to use a sensor comprised of metallic material instead of silicon because Wallrafen discloses wherein the material of the sensor can be silicon, glass, or the like.

6. Claims 5, 6, 24, 25, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee, and further in view of Wallrafen.

Regarding claims 5, 6, 24, 25, and 27, Lee in view of Wallrafen discloses micro-machined thin film cantilever actuators for steering through blood vessels, or position within a blood vessel. The actuators include tactile sensor arrays mounted on a catheter or guide wire tip for navigation and tissue identification (abstract). Lee further discloses wherein a thin film of titanium is evaporated onto a silicon substrate as an adhesive layer. An aluminum sacrificial layer is evaporated and patterned on a section of the adhesive layer. A polyimide structural layer is then spun on the remaining section of the adhesive layer and the sacrificial layer, and then they are fully cured. A titanium/gold layer is evaporated on the polyimide layer as the electrode for polypyrrole deposition and doping. The polyimide is selected due to its low thermal expansion coefficient (column 5, lines 2-33).

Lee in view of Wallrafen does not disclose wherein the additive comprises a ceramic material, aluminum oxide, magnesium oxide, silicon oxide, or microspheres.

However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to disclose wherein the additive comprises a ceramic material, aluminum oxide, magnesium oxide, silicon oxide, or microspheres, because Lee discloses wherein any type of additive may be used as long as the sensor retains its function of navigation and tissue identification.

Art Unit: 3737

7. Claims 8 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee, in view of Wallrafen, and further in view of Acker U.S Patent No. 6,161,032.

Regarding claims 8 and 29, Lee in view of Wallrafen discloses micro-machined thin film cantilever actuators for steering through blood vessels, or position within a blood vessel. The actuators include tactile sensor arrays mounted on a catheter or guide wire tip for navigation and tissue identification (abstract).

Lee in view of Wallrafen does not disclose wherein the sensor elements comprise of copper coils.

Acker discloses medical field sensors used to detect the position and orientation of medical probes within the body of a patient (abstract). The sensor comprise of coil sensors (Figures 8a and 8b).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to disclose wherein the sensor elements comprise of copper coils, as per the teachings of Acker into the teachings of Lee in view of Wallrafen, because the coil sensors aid in determining the location of the instrument within the patient's body, the precise function of Lee's invention. Lee discloses wherein his invention comprises of tactile sensor arrays for navigation and tissue information.

Allowable Subject Matter

8. Claims 13-21 are allowed.


9. Claim 3, 4, 23, 26, objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ruby Jain whose telephone number is (703) 605-4250. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dennis Ruhl can be reached on (703) 308-2262. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RJ 
March 4, 2004


DENNIS W. RUHL
SUPERVISORY PATENT EXAMINER